

Natural Areas Newsletter

Issue 17

January 1992



Naturally Yours

The Natural Areas Program is sponsored by
Alberta Forestry, Lands and Wildlife

Watchable Wildlife Survey — The Results

How important is wildlife viewing to Albertans? How much money is spent annually on this activity?

Harry Steffox, of the Watchable Wildlife Program of Alberta Forestry, Lands and Wildlife, has some surprising answers from a province-wide survey of more than 4500 Albertans. The survey was part of a study conducted by a consultant under the guidance of a steering committee representing Forestry, Lands and Wildlife; Tourism; and Recreation and Parks.

"Based on earlier surveys conducted by Statistics Canada, we suspected that watching wildlife was a very important activity, not only for enjoyment but also because of its important contribution to the economy," said Harry. "We wanted to get a handle on just how important wildlife is to Albertans so that we can better direct and develop our programs more effectively."

Highlights of the survey revealed:

- 96% of Albertans participate in various forms of wildlife viewing and 64% directly participate through activities that include maintaining bird nesting boxes or taking trips specifically to view wildlife;
- among 11 selected leisure activities, wildlife viewing was ranked fourth;
- people participated in wildlife viewing primarily to experience the outdoors;
- hunters and anglers are even more involved in non-consumptive activities than people who do not hunt or fish;
- average annual per capita expenditures are \$194 for wildlife viewing activities;
- an estimated \$350 million was spent on wildlife viewing equipment in 1990 with the four most popular items being cameras, camping equipment, binoculars and guide books;
- an estimated \$583 million was spent in 1990 for expenses related to wildlife viewing trips including transportation, accommodation, food and souvenirs; and
- wildlife viewing activities during 1990 generated an estimated \$933 million for

the provincial economy.

"Albertans demonstrated a distinct commitment to wildlife, and many of those who don't participate in wildlife activities have now expressed their interest in becoming involved," says Harry. "Much of the stimulus for this potential involvement may be related to the wildlife concerns identified by survey respondents, including pollution, loss of habitat, consumptive uses and a need for species conservation."

Where does the best wildlife viewing take place? According to the survey, locations with a variety of species (including rare or endangered species) are the most desirable. Protected areas such as national and provincial parks and Natural Areas were identified as the primary viewing sites. The second most desirable aspect for wildlife viewing areas was that they be within a two-hour drive from home. Large and small mammals, waterfowl and birds of prey were found to be the species of greatest interest. □

Site Directory Marks 20th Anniversary

By Pat McIsaac

"I'd like to visit some Natural Areas on my days off this spring. Can you suggest where I might go?" Questions like this one are very familiar to program staff. As the interest in conservation and natural history increases, more and more people are visiting sites.

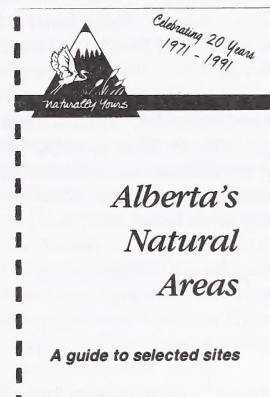
While encouraged by the public interest in Natural Areas, answering questions on sites scattered all over the province has been a time-consuming challenge for program staff. They dreamed about having a handy guide that would describe many Natural Areas and help to answer the most common questions.

Now, such a guide will soon be available! *Alberta's Natural Areas: A Guide to Selected Sites* is scheduled for printing in February 1992. This 20th anniversary publication will contain:

- an overview of the Natural Areas and Volunteer Steward programs;
- information on 32 sites including natural features, location, site facilities, habitats and local contacts; and
- descriptions of the natural regions of Alberta.

Hopefully, the guide may be expanded in future to include more of the 118 sites currently established as Natural Areas in Alberta.

As compiler of the site directory, I was responsible for text design, layout and desktop publishing. The combined efforts of many have provided us with a guide that is sure to be useful to people who want to explore Alberta by visiting Natural Areas. Program staff provided ongoing support during the project and much appreciated feedback on design of the guide. I also thank Dave Ealey from Editorial Services for his work in editing and polishing the text. Credit for final production of this guide goes to staff of the Natural and Protected Areas Section and the Public Communications Branch. □



The Resource Use Dilemma

By Don Peel
Coordinator, Industrial Land Management
Alberta Forestry, Lands and Wildlife



Protecting natural landscapes from disturbance is one of the main objectives of Natural Areas.

In some instances, the rights to resources under the surface of a specific site are allocated to different industries. In these circumstances, the Natural and Protected Areas Program is faced with the dilemma of protecting the natural features while recognizing the government's commitment to resource use. In such situations, the Natural and Protected Areas Program strives to ensure the disturbance is minimal.

The candidate Primula Natural Area (35 km/22 mi. east of St. Paul) is a prime example of interests that have the potential for conflict and how such a dilemma can be resolved.

A little history

This candidate Natural Area has been used for cattle grazing since the 1950s. It was recognized in 1974 by the International Biological Program* as being an area of "interest to conservationists and biologists." Here there are gently rolling sandy hills, supporting stands of mature spruce, pine and poplar trees, surrounded by agricultural land. The site has never been formally designated as a Natural Area due to the prior existence of grazing rights.

Fortunately, the grazing lessee, Gerald West,

has taken on the role of unofficial steward by taking special pride in ensuring that the land has remained close to its natural state.

The dilemma

In 1954, mineral rights were issued, and in 1982 the petroleum and natural gas industry was allowed access to the site in order to extract the valuable subsurface resource. Mr. West continued his role as an unofficial "steward" by requesting that the oil company design the roads and wellsites to have the least environmental impact possible.

In 1990, to save operating costs, Amoco Resources Canada Ltd., the company holding the oil and gas lease, proposed a conversion of their pumps from propane to electric power. As a result, Alberta Power Limited (contracted by Amoco Resources Canada Ltd.) applied for the use of additional lands within the Natural Area to run power lines to the wellsites. The application requested a 7.5 m (24.6 ft.) right-of-way parallel to the existing road right-of-way. When

reviewing Alberta Power Ltd.'s application, Sandra Myers questioned if there was a need to further disturb the site. Sandra, Mr. West, the Public Lands Officer of the area (Jim Lindquist) and I met with Alberta Power Ltd. and Amoco Resources Canada Ltd. to explore alternatives that would cause the least disturbance to the site. The options included activities such as running underground power lines within the access road right-of-ways, installing an overhead power line and the continuance of propane as the power source.

Agreement and negotiation

Convinced of the objectives of the Natural and Protected Areas Program, Mark Fagnan, Alberta Power's Project Coordinator, welcomed the challenge of finding an agreeable compromise. Based on the assurance of Mark that the environmental impact could be minimized, an agreement was reached to install an overhead power line. He designed the powerline right-of-way to be incorporated within the existing road clearing, only trimming or removing a few trees that posed a safety hazard for truck drivers hauling the recovered oil.

The result was that there was minimal impact on the Natural Area when the power line was installed and the hazardous road problem was alleviated. In addition, converting to electric power also reduced the noise and air pollution associated with the running of the propane pumps.

It was through the extra efforts of a few, working cooperatively in an atmosphere of understanding, that a balanced resource use was accomplished. Special thanks must be conveyed to Mark Fagnan and Gerald West for their outstanding assistance to Alberta Forestry, Lands and Wildlife in alleviating the resource use dilemma.□

*A description is provided in the October 1991 issue of the *Natural Areas Newsletter*.

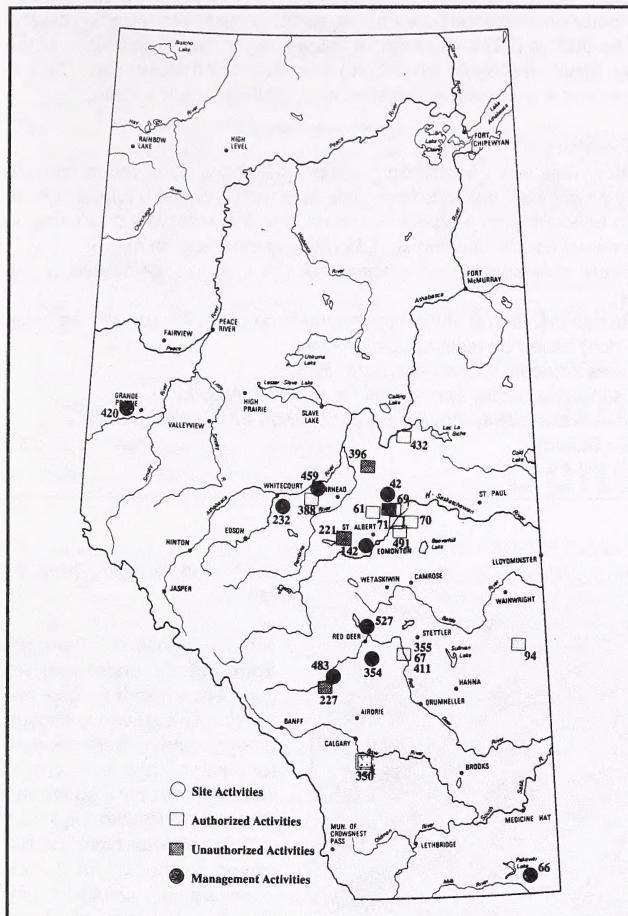
Editor's Note:

Lorna Allen, Natural and Protected Areas Biologist, is working on an information paper that addresses how oil and gas exploration and development applications for Natural Areas are reviewed and how possible impacts can be minimized. If you have any suggestions, please write or call Lorna.□

Site Activities

September 1, 1991 - October 31, 1991

A regular feature to keep volunteer stewards and interested individuals informed of activities occurring on our sites. Please consult the map for site locations.



Authorized Activities

Applications for dispositions on or for use of Natural Areas are only approved if there will be minimal impact on the natural features of the site. In some situations, subsurface leases/licences for petroleum and natural gas were issued before establishment of the Natural Area. In such situations, surface rights to access the resource are accommodated with conditions attached to minimize the impacts.

- | | |
|-----------------------------|--|
| 61. Opal | •emission monitoring stations approved for installation |
| 67. Lousana | •proposed seismic program rejected |
| 69. Redwater | •preliminary assessment for locating groundwater monitoring wells for Alberta Environment's provincial network |
| | •military training exercise |
| | •emission monitoring stations approved for installation |
| 70. Northwest of Bruderheim | •emission monitoring stations approved for installation |
| 71. North of Bruderheim | •as in #70 above |
| 94. Gooseberry Lake | •seismic program approved, subject to no new cutting |
| 350. Highwood River | •proposed seismic program rejected |
| 355. Wood Lake | •proposed seismic program rejected |
| 388. Bear Lake | •trapping permit issued |
| 411. Nevis | •proposed seismic program rejected |
| 432. Pine Sands | •approval for realignment of road |
| 491. Astotin | •emission monitoring stations approved for installation |

Unauthorized Activities

These activities occur randomly; prompt notification allows our program to monitor the situation and implement corrective measures if required.

- | | |
|-------------------------|--|
| 69. Redwater | •report of birch trees cut and sand removed |
| 221. Kilini Creek | •report of clearing and garbage dumped |
| 227. Sundre | •report of damage from off-highway vehicle use |
| 396. Spruce Island Lake | •report of oil and a bear carcass dumped on site |

Management Activities

Activities that are undertaken by staff or volunteers.

- | | |
|-------------------------|--|
| 42. Anton Lake | •reclamation completed |
| 66. Red Rock Coulee | •fence and pit toilets repaired, a "Y" gate installed |
| 142. Wagner | •draft Environmental Protection Plan completed for interchange and connector road adjacent to Natural Area |
| 232. Whitecourt | •sign installed |
| 459. Holmes Crossing | •round table and public meeting in Barrhead to discuss integrated resource plan |
| 420. Saskatoon Mountain | •thistle problem reported |
| 483. Sundre North | •garbage cleanup completed |
| 527. Braithwaite's | •fencing completed |

A leopard frog update . . .

Monitoring of leopard frog populations in Alberta will continue in 1992. We will be providing additional information on this project in the next *Natural Areas Newsletter* including how you might participate in this project. □

Whitemud Falls Ecological Reserve

This article is condensed from a more detailed article soon to be published in the *Canadian Field Naturalist* which was written by David J. Downing from Alberta Forestry, Lands and Wildlife and Randall J. Bayer and Dale H. Vitt from the Department of Botany with the University of Alberta.

Ecological reserves are part of Alberta's contribution to a larger worldwide conservation strategy to establish a comprehensive network of protected areas which are representative of the earth's ecological diversity.

Twelve ecological reserves, representing 24 810 ha, have been established in Alberta under the *Wilderness Areas, Ecological Reserves and Natural Areas Act* and are administered by Alberta Recreation and Parks. They are strictly protected sites in which representative or unique examples of major provincial ecosystems are preserved.

Field surveys of these reserves have led to numerous significant finds of both vascular (flowering plants, trees and shrubs) and nonvascular plants (mosses, lichens and liverworts).

The Whitemud Falls Ecological Reserve was established in 1987 to preserve ecosystems considered typical of Alberta's mixedwood boreal forest, and to protect unique geological and botanical features. The 900 ha (2224 ac.) reserve lies entirely within the confines of the Clearwater River valley, approximately 80 km (50 mi.) due east of Fort McMurray. There is no road access, but the river is a popular and historically significant canoe route.

Significant natural features

Within the reserve, many rare and uncommon plant species have been found that are disjuncts (separated by a significant distance from their main range) or at the furthest extent of their range. Such a concentration of species, considering the reserve's small size, is related to the area's unusual habitat conditions. Of particular significance are:

- large, limestone bedrock exposures (rock stacks) that are rare in Alberta east of the Rockies and foothills;
- small, spring-fed wetlands that are relatively uncommon in northern Alberta and probably calcareous (calcium rich) based on tests of spring water;
- frequently flooded areas adjacent to the Clearwater River;
- dry sand plains and dunes that occur sporadically in northern Alberta;
- Whitemud Falls itself — waterfalls in Alberta are uncommon east of the foothills and south of the Canadian Shield;

continued on page 5

Our Underwear Adventure

by Sandra Myers and Peter Lee

Surveying unique areas in Alberta and searching for rare species, such as at Whitemud Falls, is fascinating and an important part of our jobs. But the article "Whitemud Falls Ecological Reserve — Rare and Disjunct Plants" reminded us of certain other aspects we often conveniently forget.

As Peter remembers . . .

"A few years after our work at Whitemud Falls, I opened a package I had received through the mail and an old pair of "not-so-clean" men's briefs fell out onto my desk. An accompanying note said, 'Found these near the campsite you and Sandra were at in the Whitemud Falls area. Cheers! Dave D.' Well, what a flood of memories my old underwear brought back"

We had been camped for no more than a day when a large, black bear began pestering us by repeatedly approaching our campsite. We had stored our food in a sling between two trees but, even while we were at the campsite, the bear would boldly walk toward us and stop only a few metres away. The first night he took our food from the tree and even ate the dishsoap. The next day when we returned from our fieldwork, our uninvited guest was



in the process of reducing our campsite to rubble. Our tents were ripped, our luggage torn and scattered."

Sandra recalls that . . .

"Peter's underwear, obviously a prized treasure, was hooked over one of the bear's

teeth and dangling from its jaws.

Whatever thrill the bear got from Peter's underwear, at least it was kept busy for a few hours. This gave us enough time to assemble the meagre remains of our belongings, including the only food we had left for the next two days — a package of Wasa crackers. We moved to the top of a rock stack, where it would be very difficult for the bear to approach.

There we sat for the most part of two incredibly hot August days waiting for the helicopter to return. Space was so limited that we took turns sitting inside the pup tent or on the narrow ledge. The only respite was one brave foray Peter made into the area where the now-famous *Anomodon minor* moss collection was made. That foray ended abruptly when Peter was chased back to the rock stack

by the bear."

With the return of Peter's underwear more than five years after our trip to Whitemud Falls, we were reminded of two things — our often adventurous work for Natural Areas ... and that they sure don't make underwear like they used to! □

Whitemud Falls Ecological Reserve

(continued from page 4)

- sandy fluvial and aeolian (windborne) deposits covering most of the reserve's bedrock; and
- physical and chemical weathering of Devonian dolomites which has promoted development of karst features (underground drainage with cavities, caused by dissolution of the calcium magnesium carbonate rock).

Field surveys of the reserve were conducted by the Land Information Services Division of Alberta Forestry, Lands and Wildlife over a 10-day period in July 1987. The following results were revealed:

- 198 vascular plant species from 49 families;
- 57 mosses representing 24 families;
- 4 hepatics (liverworts) from 3 families;
- 35 lichens representing 7 families; and
- 16 vascular and 6 nonvascular plant species which are rare or disjunct in Alberta.

The moss plant, *Anomodon minor*, has a fascinating continental distribution. It is located primarily in southeastern North America. Experts claim this is a result mostly of Pleistocene glaciation. The plant survived glaciation south of the maximum extent of the ice in the east, and has only minimally migrated northward upon the retreat of the Wisconsin Ice. The southwestern United States, Guatemalan and Mexican occurrences may be relict in nature, dating back to pre-Miocene invasions of eastern forest elements.

With the discovery and collection of *Anomodon minor* in glaciated northeastern Alberta, by Peter Lee and Sandra Myers of the Natural and Protected Areas Program, some interesting questions are raised. How did this plant, found more than 600 km from any ice-free areas in western North America, and 1300 km from its nearest populations in southeast Manitoba, end up so far away from any other populations? It obviously does not migrate quickly. Do the plants at Whitemud Falls resemble the other populations found in southwestern or eastern North America? Apparently the southwestern populations are more similar to populations of eastern Asia than to those in eastern North America. Some experts feel that the answers to these questions could have significant results regarding the distribution of plant species following glaciation. For now however, the explanation for *Anomodon minor* occurring at Whitemud Falls Ecological Reserve is a mystery! □

We're looking for a new name . . .
Send us your ideas and win!



The focus of the Natural and Protected Areas Section has changed to include other protected sites. It is felt that a change in the title of the newsletter is required to reflect the expanded role.

We would like our volunteer stewards to help us choose a new name for this newsletter.

Send us your suggestions by February 17, 1992. The winning name will appear in the April 1992 issue of what is now the *Natural Areas Newsletter*. The winner will receive a print of the original great blue heron painting commissioned for the first Volunteer Steward Conference. Write to: Natural and Protected Areas Program, 4th floor, 9915-108 Street, Edmonton, Alberta T5K 2C9. □

Ann and Sandy Cross Conservation Area Opens

While Natural Areas Program is one Alberta government initiative to protect public land through legislation, there are a number of private organizations working to protect important habitat and species on private land. One of the most significant contributions to Alberta's privately protected areas is the establishment of the Ann and Sandy Cross Conservation Area through the Nature Conservancy of Canada.

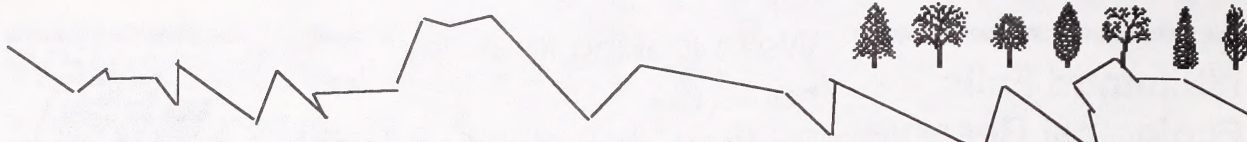
The Ann and Sandy Cross Conservation Area, 809.4 ha (2000 ac.) of beautiful prairie and parkland, officially opened for conservation education and recreation activities in October 1991. The Cross name will be familiar to many Calgarians since Sandy's father was one of the founders of the Calgary Exhibition and Stampede. At the request of the Cross family, the conservation area will be managed in perpetuity by the Nature Conservancy of Canada.

The site provides habitat for more than 860 species of wildlife and plants, ranging from large mammals (mule deer, wapiti, cougar, moose) to native fescue grasses. It is located only 1.6 km from Calgary's city limits and provides a natural setting as a classroom for 15 000 Alberta students annually. The site is open to the public by appointment only.

Belvedere House, an on-site facility that offers meeting and classroom space, a registration/information office and public facilities is now finished. An extensive interpretive trail system is being designed by Parks Canada volunteers. The Nature Conservancy of Canada also plans to have a resident manager, naturalist program and interpretive centre.

The land donation was one of the largest private land donations ever made in Canada for a conservation area. Ann and Sandy enhanced their generous donation with a significant financial contribution to the Nature Conservancy of Canada's \$2 million fund-raising campaign to pay for the trail system development and educational components. Chevron Canada Resources, Amoco Canada and the Alberta government have also contributed significantly.

This important area is now Alberta's to protect and enjoy. But to reach its potential as an environmental conservation landmark, continued support for the Ann and Sandy Cross Conservation Area is essential. The Nature Conservancy of Canada is a charitable, national land conservation organization that has worked in partnership with the private sector and government to preserve more than 32 376 ha (80 000 ac.) of endangered habitat at 440 locations across Canada. If you would like more information about the Ann and Sandy Cross Conservation Area or on the Nature Conservancy of Canada or to book an appointment to view the site, please phone Larry Simpson in Calgary at 294-7064. □



Fragmentation



Natural ecosystems are traditionally studied as separate entities, e.g., a spruce woods, an aspen forest or a fescue grassland. We now know they are not separate entities, but rather integrated components of the natural landscape. The configuration of the pieces is as important as the makeup of the pieces themselves.

Fragment is a term used to describe a landscape that was once essentially natural but has undergone human-induced change in some way. The effect that this change has on our natural landscape is one that we are only beginning to understand. The Natural and Protected Areas Section contracted Leslie Brown and Robert Wright to review literature about fragmentation and to summarize some of the causes and results. This article summarizes their findings.

The impact of fragmentation on a natural landscape depends on many factors, including distance between fragments, connecting corridors for animal and plant movement, and the size and shape of fragments. Scale is an important factor in measuring the effect of fragmentation. For instance, a fire that burns individual trees or stands of trees in a Natural Area may be devastating to that small site, but overall it could be beneficial in maintaining the natural mosaic of the surrounding area.

Potential impacts of fragmentation can be divided into two main types, barriers to species' movements and edge effects.

Barriers to Species' Movements

When an area is fragmented, individual pieces are essentially "islands" with species separated from the rest of the natural landscape.

As populations of plants or animals become isolated from other populations, there is no longer mixing of populations, resulting in a loss of genetic diversity (inbreeding). The result could be extinction of species within individual fragments. Depending on the species, the size of disturbance need not be large for this to happen. Some studies have found that disturbances in areas as small as 10 m (33 ft.) for insects and 100 m (328 ft.) for birds can create barriers to movement. Keeping in mind the web of life represented by an ecosystem, the loss or reduction of one species affects others.

One study showed that when insect movement into a site was blocked by a road, there were fewer pollinators and the low pollination rates reduced the reproductive success of insect-pollinated plants.

Edge Effects

The area where a disturbance and natural community meet is called the edge; the edge effect describes how the creation of an edge affects the natural community. Most studies on this have focused on the edge effect created when forests are fragmented by cropland development. Very little is known about the effect on grasslands, wetlands or shrublands, but it is reasonable to assume that there could be edge effects with these communities as well.

In forests, the edge effect can cause potentially disruptive micro-environmental changes in water flow, soil temperature, wind and light. Studies show that increased wind turbulence downwind of cleared areas has resulted in windthrow (blowing over of trees). In addition, one study demonstrated that increased tree-sway reduced nesting success.

An increase in the wind and light at the edge of a forest may create favourable conditions for disturbance-area animals and shade-intolerant plants not previously found in the

area, while "interior" species are lost. Often the species favoured by fragmentation of a landscape are opportunistic and their invasion negatively affects resident species. Some studies, for example, have shown that brown-headed cowbirds, a species that parasitizes other birds' nests, and crows (a species that will rob nests) have been favoured by fragmentation. Because of this, the rate of nest predation increases within 500 m of an edge and, combined with nest parasitism, results in a decline in reproductive success of forest-interior birds.

What kinds of disturbances result in fragmentation?

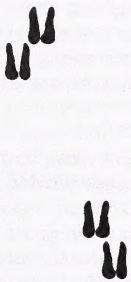
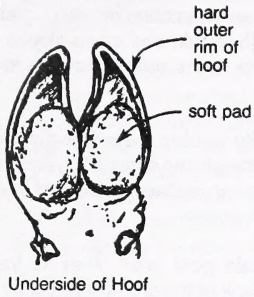
The answer is **any** disturbance. Roads, especially those over 20 m wide, are effective barriers to movement of insects and small mammals, and will change the microclimate up to 30 m from the road's edge. A study on the impact of a nature trail showed a vegetational disruption 2 m to 3 m wide in understory vegetation. In addition, the trail attracted some of the generalist predators, such as blue jays and brown-headed cowbirds.

Fragmentation is thought to be the primary cause of the alarming extinction rate of species and the most serious threat to biological diversity. The state of the pieces of the landscape is important, but equally so is the pattern of how those pieces fit together and interact.

Natural Areas are usually quite small and therefore subject to the effects of fragmentation. We must view each site as a core or nucleus within a larger landscape unit, not as an isolated island. What takes place in a Natural Area is important to the surrounding region but, perhaps more importantly, what goes on in the surrounding region is critically important to the Natural Area. □

Bovid Tracks

MOUNTAIN GOAT



37.50 cm

Walking Gait

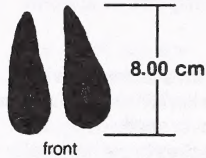
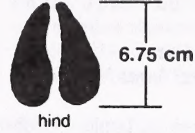
BIGHORN SHEEP



41.50 cm

Walking Gait

PRONGHORN

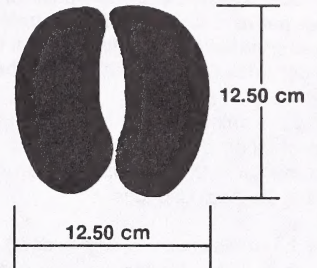


31.25 cm

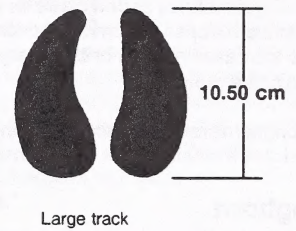


Slow Run

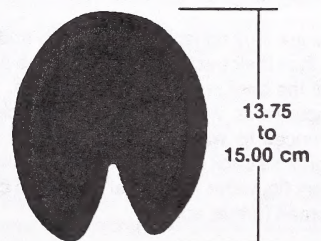
BISON



Domestic Cattle



Horse



↑ direction of travel ↑

↑ direction of travel ↑

Turn over for descriptions of bovids on reverse

Animal Tracks

Part 4b — Ungulates

This article reviews the representative tracks of four more ungulate species native to Alberta and some tracks of domestic animals you may see in the field. You will find "Animal Tracks, Part 4a — Ungulates (Cervids)" in the October 1990 issue of the *Natural Areas Newsletter*.

Most of the animals listed here are in the Bovidae family, which includes bighorn sheep, mountain goats, bison and domestic cattle. The pronghorn is the only representative of a family unique to North America, the Antilocapridae.

Unlike the cervids (moose, wapiti, deer) which have antlers, bovids have horns. Horns, formed of a bony core and a keratinized sheath, grow throughout the life of the animal and are never shed. They are often spectacularly long and form graceful curves, as in the horns of the bighorn sheep, and are never branched.

The typical bovid foot has four digits and the animal's weight is borne equally on the third and fourth digits. The second and fifth digits terminate as dew claws which are slightly elevated at the rear of the hoof and are called into play for support only on soft surfaces. A mountain goat will use its dew claws for extra braking and traction on steep, smooth slopes. A bovid's hooves tend to splay or separate to provide increased traction or buoyancy when the animal travels or runs on soft ground.

The pronghorn proves an exception in that it sheds the horn's sheath, it does have a small branch in its horns and lacks dew claws.

Pronghorn

Pronghorn (*Antilocapra americana*) are renowned among North American mammals for their speed. They have been recorded at speeds of up to 97.6 km per hour and at a sustained speed of 72 km per hour over a distance of six km. Their speed is partly attributed to their modified foot, on which they have lost the second and fifth digits which form the dew claws of Alberta's bovids and cervids. Another adaptation of cursorial (running) species is often the lengthening of the limbs which is demonstrated well in the pronghorn. This elongation increases the stride, whereas the reduction in the weight (loss of dew claws) helps to increase the rate of the stride by reducing the amount of load that must be moved.

These are very conspicuous animals and you are more likely to see them than their tracks. The track of the pronghorn is very much like that of the deer in both size and shape. However, there are many characteristics that separate the tracks of these two species. Differences to watch for are that, in comparison to a deer, the pronghorn's track not only lacks dew claws but is slightly narrower at the very tip, wider at the rear and more curved so that it appears to be spread further apart.

The individual track ranges between 6.9 and 8.1 cm, which is similar to that of the mule deer. As with other ungulates, the pronghorn hind feet land slightly ahead of their front feet when running, but their stride is greater and may reach up to 8 m in a single bound though 4 m is more typical.

Mountain Goat

The mountain goat (*Oreamnos americanus*) of North America is not

a goat at all, but is more closely related to the chamois of the southwest Asian mountains.

A mountain goat's short, muscular legs and specially designed hooves take the impact and wear while still providing spring and traction on steep surfaces. Unlike other ungulates, this animal's hooves have a slightly convex base with a flexible pad that extends beyond the outer hard shell. Such an adaptation provides greater traction and more dexterity on rough terrain and steep slopes. In addition, the dew claws provide grip when moving down a steep surface.

Mountain goat tracks are generally square because the outer dimensions of the digits are approximately the same back and front. The track length is about 8.9 cm. The convex base of the hoof makes it appear bigger than that of bighorn sheep.

You will more likely see a mountain goat itself, then its tracks because it specializes in cliff life. Many of the areas where they are found are inaccessible or impervious (i.e., rocky).

Bighorn Sheep

In comparison to the mountain goat, the bighorn sheep's (*Ovis canadensis*) tracks are similar in appearance and size except the inner edge is slightly curved and the hind feet tracks may be 1 cm shorter than for the front feet. Deer tracks however, are less block-like than either of these two species' tracks.

Both ungulates tend to drag their hooves in light snow; however, so do some deer, so this behaviour may not always provide a useful characteristic in the tracks. Bighorn sheep tracks are most likely to be confused during the summer with the mountain goat's as both species may be found at higher locations. In such situations, check for other signs such as the number of individual tracks or the presence of tufts of hair (goat hair is always white). Sheep tend to prefer open meadows and are usually found in larger bands than goats or deer which tend to be more solitary.

Domestic Ungulates

The domestic ungulates are from several families and most have cloven hooves. An exception is the horse (family Equidae) in which only the third digit is functional and this provides for a highly cursorial (running) limb, as in the pronghorn.

Identifying tracks of domestic cattle cause the most grief to naturalists because of similarities with the tracks of the large cervids (moose and wapiti). The tracks of bison, rarely seen outside a fenced compound, are not likely to add to the confusion because of their large size and round shape. The typical "cow pattie" and "buffalo chip" scat forms also help identify these mammals.

Small domestic ungulates including sheep and goats (family Bovidae) and swine (family Suidae) may occasionally leave tracks in some Natural Areas. Their tracks are very similar to those of deer and would be difficult to identify. Fortunately, the likelihood of finding such tracks is small.□

Turn over for animal tracks on reverse ➡

Volunteer Steward Profile:

Cheryl Croucher

Her voice is familiar to the faithful listeners of CBC Radio's "Wild Rose Country" and "Edmonton A.M.". As the environmental specialist of the airwaves for Alberta, Cheryl tackles "green" lifestyle issues.

Two things she's learned on the job are that there are no easy answers to complex problems and that sometimes the media has a tendency to oversimplify issues.

"The response from listeners has been really good," says Cheryl. "They've said that they appreciate the approach I take which is to look at things in a fair way, not to determine good guys and bad guys."

It was radio that brought Cheryl to the Volunteer Steward Program. A few years ago she happened to spy a notice about the program, thought it would make a great story, and soon found herself at the Wagner Natural Area. As Cheryl explains, "It was a cold January day and Alice Hendry, one of the stewards, took me on a tour of the site. As she's pointing out animal tracks and the improvements they'd made and describing the struggles their group had, I knew this was the kind of program the Western Walleye Council should be involved with." At the time, Cheryl was on the council's executive board and was eager to encourage family participation in outdoor activities, beyond catch-and-release tournaments.

Western Walleye Council members concentrated their efforts on finding sites needing stewards which were adjacent to lakes containing walleye. Three sites — Moose Lake Islands, Beaver Lake and Baptiste Lake — were eventually chosen by the council which remains the volunteer steward.

Baptiste Lake, near Athabasca, is where Cheryl spends the majority of her time during the summer since her family's cabin is there. Daughters Zoe and Alia Todd and stepdaughter Lee Todd have become secondary stewards. When Cheryl heads to the lake for summer holidays and weekends, so does her family. Together they've discovered a Metis cabin deserted since the 1920s, another cabin still used by trappers, and an assortment of moose, deer and wood frogs. Last summer they found a stream hidden behind ferns and grasses. "The girls love going to the site, especially since we discovered bear droppings and people around the lake sighted a mother and her two cubs," says Cheryl.

The council is at an exploration stage with Baptiste Lake, but it is enthusiastic about establishing interpretive trails and signs, as well as outdoor education and public education programs to encourage responsible use of the site. They'd like to encourage Athabasca University botany students to research the site and share what they find. This Natural Area has been the focus of attention because of its accessibility. All-terrain vehicles frequently travel along the pipeline which is causing erosion to occur. Beaver Lake, near Lac La Biche, is remote and the islands encompassed by Moose Lake Islands, located near Bonnyville, do not attract many visitors, so protecting these areas against heavy use is not a concern.

Cheryl declares that since becoming a steward, she has developed a much greater appreciation of nature and is learning "from scratch." Baptiste Lake residents have provided



a wealth of information. In addition, Cheryl's next door neighbour is a wildlife biologist. And, on the other side of the lake lives the "spider man" who has discovered 250 different species of spiders in the area. She has also spent considerable time developing good relationships with biologists, foresters and chemists in researching radio features for her regular spot on "Wild Rose Country" and frequent appearances on "Edmonton A.M."

Cheryl was teaching piano when she joined CBC 14 years ago as a "Girl Friday," and began a two-year stint in the Human Resources area before moving to the production side. The first week on the job, Cheryl filled in as producer of "The Saturday Morning Show." Eventually, with the support of the well-known consumer commentator, Ethel Marlist, and armed with her own good ideas, Cheryl also became a consumer commentator with her items syndicated on CBC across Canada. "I found that more and more consumer issues were becoming environmental issues — energy efficiency, garbage, air pollution, unsafe product recalls, household toxic chemicals — and the two couldn't be separated," says Cheryl. She became the station's provincial environmental specialist in 1990 with the task of answering the many questions posed by listeners.

Cheryl does have a word of advice about the Natural and Protected Areas Program: "Advertise." As she puts it, "When you get people involved, they develop a sense of ownership. This is one program that proves you don't have to throw a lot of money at something to make it work. Let's have more of them." □



Cheryl's daughters Zoe, Alia and stepdaughter Lee

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This newsletter is published quarterly by the Natural and Protected Areas of Alberta Forestry, Lands and Wildlife.

Eagerly-awaited technical report released

Editor's note: *Significant Natural Features of the Eastern Boreal Forest Region of Alberta* can be purchased from Maps Alberta (437-3520) for \$25 per copy. Call through the RITE operator listed in your local telephone directory.

The Natural and Protected Areas Section participated in a 1990 study commissioned by Alberta Forestry, Lands and Wildlife to inventory the significant natural features of Alberta's eastern boreal forest region. The study was undertaken by D.A. Westworth and Associates Limited.

As well as identifying the significant features, the objectives of the study were to rate the features as being regionally, provincially or nationally significant from a biophysical perspective, evaluate their sensitivity, suggest points that should be considered for their management and identify information gaps.

The criteria for identifying a significant natural feature included the following:

- contains significant, rare or endangered plant or animal species;
- contains rare or unique geological or physiographical formations;
- contains unique or remnant habitats that have limited representation in the region;
- performs a vital environmental, ecological or hydrological function;
- contains large and relatively undisturbed habitat that is basically intolerant of human disturbances;
- links geographical areas and assists movement of wildlife over large distances, by way of migration corridors and migration stopover areas; and
- contains plants, animals or landforms that are unusual or of regional, provincial or national importance.

Within the study area, 3 sites were identified as having national significance, 44 were

provincially significant and 187 were regionally significant. For ease

of data and report organization, these sites were broken down into terrain, vegetation, wildlife, fish and ecological diversity feature categories. The sites covered the following: the Athabasca River and its associated valley features; the springs and tufa deposits at La Saline Natural Area; the rare plant species and unique geological formations at Whitemud Falls Ecological Reserve; nesting sites for colonial-nesting birds such as the American white pelican; a variety of peatland types; woodland caribou ranges; old growth forests; subarctic plateaus; areas of high otter concentrations; important fish spawning streams; raptor nesting areas; and rich river deltas.

The information contained in the *Significant Natural Features of the Eastern Boreal Forest Region of Alberta* will be of considerable value in forest management planning, as well as for any other industrial use planning in the area. The staff of protected area programs will also use the information to identify sites that may eventually become legally established. □



Season's Greetings!

I would like to first extend a warm welcome to all of the new stewards who have joined our program during the past year. The coming year, 1992, promises to be an exciting and challenging year for both the Natural Areas and the Volunteer Steward programs.

New publications that will be available in 1992 are *Alberta's Natural Areas: A Guide to Selected Sites* (see article in this newsletter) and species checklists for selected Natural Areas. These publications should prove helpful not only to volunteer stewards, but also to the public who wish to visit our sites.

As with most government programs, we will likely face the challenge of a reduced budget. However, providing support to volunteer stewards will continue to be a high priority for us. At this time, we are exploring the possibility of hosting another Volunteer Steward Conference. We are presently looking at innovative methods to try to pull this together, including the possibility of cooperative funding with other agencies. Over the next year, I will be providing you with updates asking for your input in preparing the conference program. Hopefully we will have the opportunity to meet in the spring of 1993 at the Second Volunteer Steward Conference.

Staff of the Natural and Protected Areas wish you and your family the best in the New Year.

Sandra Myers
Volunteer Steward Coordinator □



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